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Research Article

RECTAL MISOPROST VS INTA MUSCULAR SYNTOCINON IN THE MANAGEMENT OF THIRD STAGE OF LABOUR

Amrutha S. Patil

M.B.B.S., M.S., (OBG)

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INTRODUCTION

Postpartum haemorrhage is a single largest and leading cause of severe maternal morbidity and mortality, not only in developing countries, but also in developed countries.

Worldwide PPH is responsible for upto 125,000 maternal deaths per year and it is associated with morbidity in 20 million women per year. The importance of prevention particularly when there is limited access to emergency medical facilities is therefore obvious.

Drugs conventionally used for prophylaxis against PPH includes oxytocin, methyl-ergometrine and 15 methyl PGF2α, prophylactic use of oxytocic agents after delivery of the infant has been shown to reduce the incidence by 40%.[1]

The use of these uterotonic agents in the management of third stage of labour reduces the amount of bleeding and need for blood transfusion. But it is associated with side effects ranging from Nausea, vomiting, and hypertension to postpartum eclampsia, intracerebral haemorrhage, myocardial infarction, cardiac arrest and pulmonary oedema etc.

These agents are given by injections, which requires sterile needles and syringes, which is important consideration in era of hepatitis and HIV. Drugs like PGF2α and PGE2 requires special storage condition (refrigeration) and all are not stable at high temperature. Syntocinon is also known to be useful in preventing PPH, but this drug also has to be used parentrally and they are expensive.

Uterine atony which complicates 1 in 20 deliveries results in excessive blood loss when adequate myometrial contraction fails to occur after placental expulsion. Risk factors for uterine atony include conditions where uterus is overdistended (polyhydramnios, multiple gestation, foetal macrosomia, rapid or prolonged labour, chorioamnionitis) or with use of uterine relaxing agents like tocolytics or general anaesthesia.[2]

As a part of physiological adaptation to pregnancy the spiral arteries of placental bed are denuded of their muscular layer. So active management is aimed at promptly initiating the uterine contraction to compress these spiral arteries as they run among uterine smooth muscle fibres. Active management of third stage of labour include early cord clamping and controlled cord traction and administration of oxytocic drugs such as ergometrine and oxytocin have been beneficial.[3]

Intramuscular injection of syntocinon(oxytocin) has been tried successfully in active management of the third stage of labour.

But these drugs ergometrine, oxytocin and PGF2α require storage at 2-8 ºC and must be protected from light. Storage requirement are major hurdle to the widespread use of these drugs.

Misoprostol has become an important drug in obstetrical practice because of its strong uterotonic action and is helpful in management of third stage of labour.

Misoprostol, a PGE1, analogue marketed for peptic ulcer disease has proven to have uterotonic effects when administered orally, rectally and vaginally. It has shelf life of several years and hence does not require specific conditions for storage. It does not raise blood pressure in doses up to 800 micrograms and can be effective alternative to methyl ergometrine for third stage of labour. Vaginal route is not feasible after delivery. The rectal route is chosen for this study because of the practical advantage of the reactal route like:

1. Ease of administration.
2. Patient compliance is not required.
3. Gastro intestinal side effects like diarrhoea, nausea and vomiting may be less than oral route. Hence, this study has been undertaken to see for efficiency of rectal misoprostol in the third stage of labour.

In a prospective study, oral and rectal misoprostol has been suggested as effective in prevention of PPH.

However, there are few reports of rectal misoprostol for third stage management.

The present study is an attempt to compare intramuscular syntocinon and per rectal misoprostol in the management of third stage of labour for prevention of post partum haemorrhage.

Corresponding author: Amrutha S.Patil | E-mail: patilamrutha09@gmail.com

OBJECTIVES

1. To compare the efficacy and side effects of 600µg of rectal misoprostol with intramuscular Syntocinon 10U in prevention of postpartum haemorrhage.
2. To estimate amount of blood loss during the third stage and duration of third stage of labour in both groups.
3. To know and evaluate the safety of the drugs in the management of 3rd stage of labour.

METHODOLOGY

The present randomized study is to compare the efficacy of per rectal misoprostol and intramuscular syntocinon in the management of third stage of labour to prevent Post partum hemorrhage.

The study was conducted in the Department of Obstetrics and Gynaecology at the teaching hospitals attached namely.

1. Basaveshwar general and teaching hospital
2. Sangmeshwar general and teaching hospital,

Two hundred pregnant women at term with spontaneous onset of labour were included in the study and were randomly divided into 2 groups of 100 women each group A and group B were given per rectal misoprostol (600µg) and intramuscular syntocinon(10U) respectively at that delivery of anterior shoulder of foetus.

200 cases admitted to the above hospitals who fulfilled the selection criteria were included for the study. The study was conducted from 2011 to 2013

Inclusion criteria:

All patients in the age group of 19-<35 years, period of gestation ranging from 37-40 weeks and gravidity –both primi and multi gravida, at term with spontaneous onset of labour were included in the study and subjected to vaginal delivery.

Exclusion criteria:

Multiple pregnancy, intrauterine foetal death, previous caesarean section, pregnancy induced hypertension, antepartum haemorrhage, heart disease, bronchial asthma, renal disease, liver disease, allergy to drug, and haematological disorders.

The selected cases with inclusion criteria was divided into 2 groups

Group A: Misoprostol 600µg was inserted per rectally immediately following birth of baby (100).

Group B: Injection syntocinon(10U) intramuscular was given at the delivery of anterior shoulder (100).

Each of the patients will be allotted to one of the groups by coloured coins method (self selection — random sampling method).

Methodology:

An informed consent was taken from the patients who met the inclusion criteria. These women underwent a thorough general and systemic examination like cardiovascular system, respiratory system, per abdomen and per vaginal examination.

The women were given either syntocinon(10U) intramuscular or per rectal misoprostol (600µg) at the delivery of anterior shoulder of foetus.

Collection of blood

The blood loss during the third stage of labour and the was calculated by keeping a sterile kidney tray at the vulva after the delivery of foetus and collected blood measured by a measuring jar and 'Estimated total blood loss' was noted down. If intravenous oxytocin was used during the second stage of labour, it was stopped immediately after delivery.

Blood clots were collected and weighed, and blood loss was calculated accordingly (1 gm of clot= 4ml of blood).

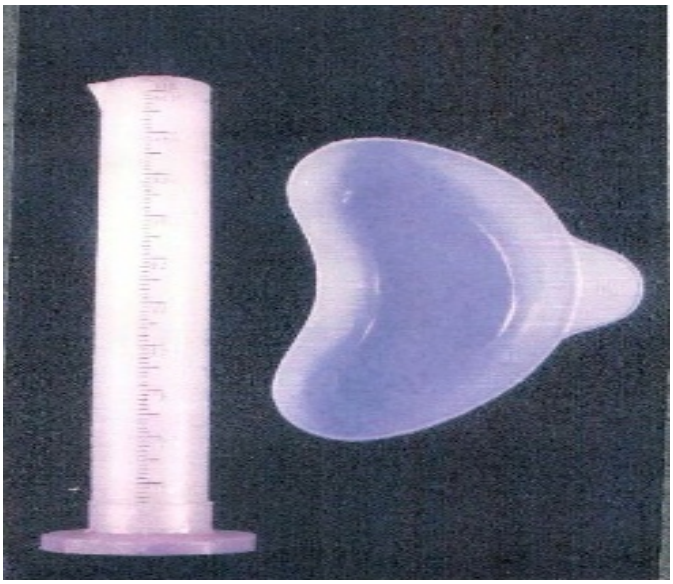
Length of third stage of labour, and side effects including nausea, vomiting, diarrhoea, shivering, and retained placenta were recorded. If uterine bleeding was more, than, additional oxytocics if given (intra venous infusion of oxytocin 5-10U,and intramuscular methergin 0.2mg)was noted.

Hemoglobin (Hb) in gm% was done at the time of admission to the labour room and repeated 48 hours after delivery.

A pretested proforma was used to collect the relevant information (like patients data, clinical information, investigation reports etc.) from each and every individual related from the cases.

Statistical analysis of the 2 groups was done by Chi-square test and t-test (normality test).

Chi-square test was used to analyse categorical data and t test for comparing means of two groups. A two tailed $p<0.05$ was considered statistically significant.



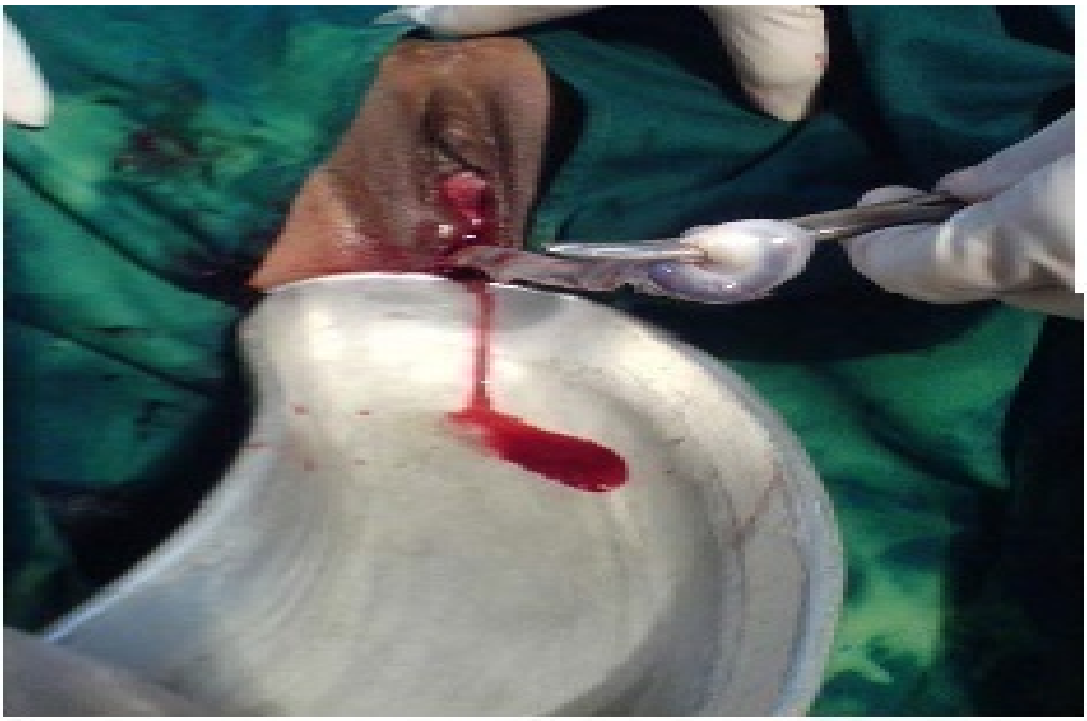


Table-9: Amount of Blood Loss in 3rd Stage Of Labour

Blood loss (ml)	Misoprostol	Syntocinon
50-100	9	38
101-200	40	57
201-300	38	3
301-400	10	1
401-500	3	1
>500	0	0
Total	100	100
Mean± SD	236.8± 119.9	160± 127.5
Unpaired t test	t= 4.36	P< 0.05,Sig

In misoprostol group, blood loss of less than 100mL was observed only in 9 cases while maximum number of patients 40 had blood loss between 101-200 ml and in 38 cases blood loss was in between 201-300mL. Only 10 cases blood loss was between 301- 400ml. Only 3 patients lost blood more than 400mL. Average blood loss was found to be 236.9±119.9ml.

In syntocinon group 38 patients had blood loss less than 100ml, whereas maximum patients 57 had blood loss between 101-200mL, 3 of this group were having blood loss between 201-300mL, blood loss between 301-400mL was observed in 1 and 401-500mL also in 1 case. Average amount of blood loss was found to be 160.5±127.5ml.

Average blood loss in misoprost group was 236.9±119.9ml and in syntocinon group was 160.5±127.5ml, showing that there is significant reduction in blood loss in syntocinon group compared to misoprost group with p value < 0.05 s.

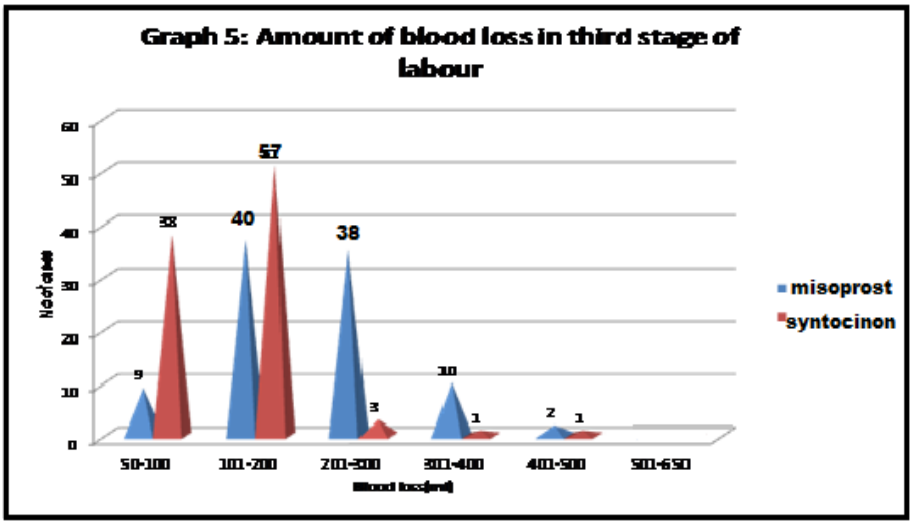


Table 10: Average fall in Hb level because of Postpartum Blood Loss

Groups	Average fall in Hb(gm/dl)	SD	Significance
Misoprostol	0.69	0.49	t= 3.40 P< 0.05,S
Syntocinon	0.49	0.31	

Unpaired t-test

Average fall in Hb level was 0.69 g/dl in misoprostol group whereas in syntocinon group it was 0.49 g/dl., and data was analysed using Unpaired t-test with p value of < 0.05, fall in Hb was reduced in syntocinon group compared to misoprostol group suggesting statistically significant association.

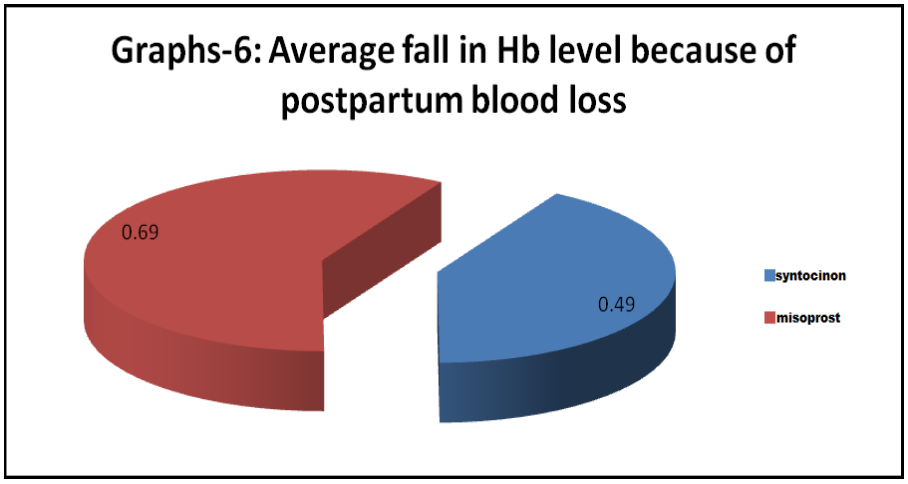


Table 12: Duration of third stage of Labour in both groups

Duration of 3rd staging labour (min)	Misoprostol	Syntocinon
2-4	1	22
4-6	15	36
6-8	30	28
8-10	28	11
10-12	23	2
12-14	2	-
> 30	0	0
Total	100	100

In misoprostol group, only 1 patient has III stage duration of less than 4 mins, 15 patients had duration between 4-6 mins, Maximum number of cases i.e. 30 had duration of III stage between 6-8mins,28 took 8-10 minutes during this stage, 23 had duration of III stage of 10-12 mins, 2 took 12-14 mins,.

In Syntocinon group, maximum patients 36 took 4-6 mins during their III stage, 23 had third stage duration of 2-4 mins, 28 patients had duration of 6-8 mins, 11 took 8-10 mins during the third stage. Among this group only 2 patients took 10-12 mins during this stage,.

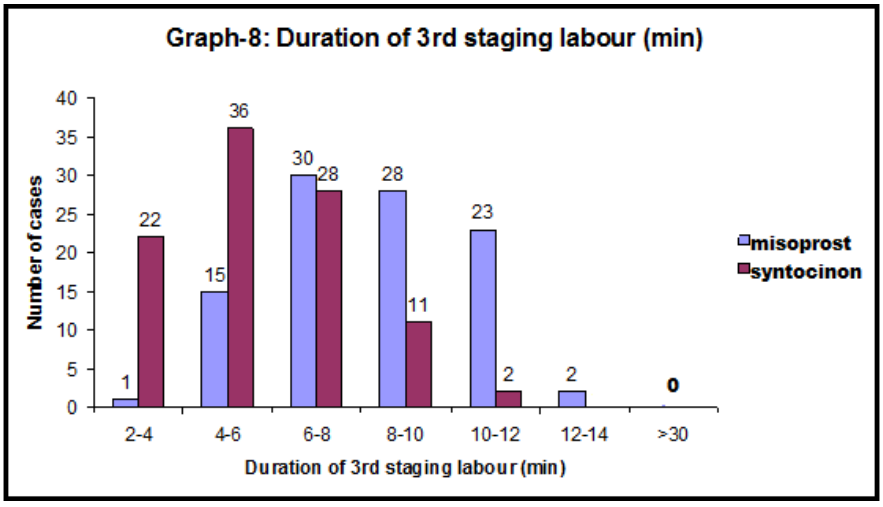


Table 13: Average duration of third Stage of Labour

Groups	Mean duration of 3rd stage of labour (min)	SD	Significance
Misoprostol	8.03	3.23	t =7.37
Syntocinon	5.26	1.9	p< 0.05,s

Unpaired t-test

In misoprostol group, average duration of III stage of labour was found to be 8.03±3.23 mins whereas in Syntocinon group it was found shorter, 5.26±1.9 mins , t value was 7.37 with p value of < 0.05 suggesting duration of third stage of labour was significantly reduced statistically in Syntocinon group.

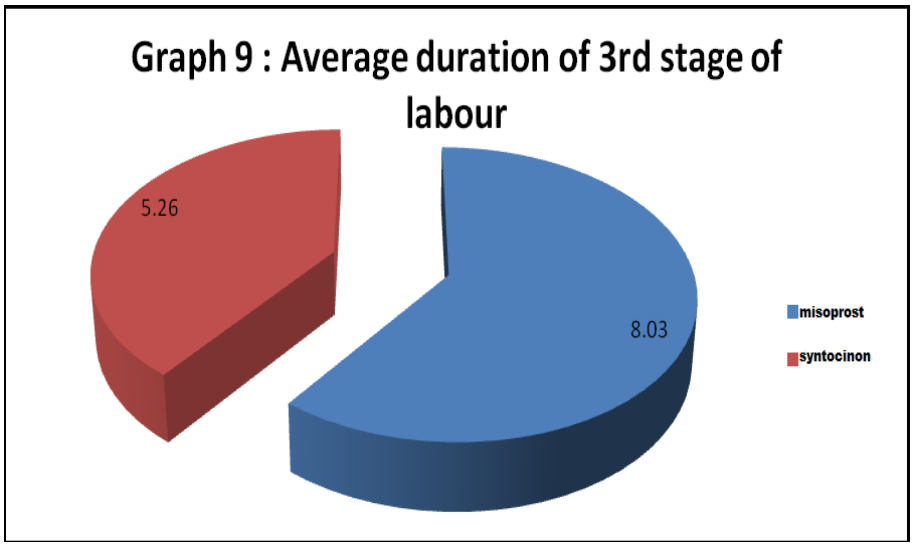


Table 15: Average amount of Blood Loss in Relation with duration of III Stage of Labour

Duration of 3rd stage of labour(min)	Blood loss (ml)	
	misoprostol	Syntocinon
2-4	180	215.9
4-6	213	141.4
6-8	227.5	146.4
8-10	247.9	141.8
10-12	236.9	170
12-14	275	
> 30	0	0

In misoprostol group, 275ml of blood was lost when duration was 12-14 mins, it was 236.9 ml when duration was 10-12 mins, 247.9ml blood loss occurred in duration range of 8- 10mins, 227.5ml of blood loss occurred with 6-8 mins duration, 213mL blood loss occurred when duration was 4-6 min and minimal blood loss in this group was 180ml when duration of IIIrd stage was 2-4 mins.

In syntocinon group, 215.9ml of blood loss occurred at 2-4 mins duration of third stage,141.4ml at 4-6 mins duration, 146.4ml at 6-8 mins duration, 141.8ml at 8-10mins duration , 170ml at 10-12 mins duration of third stage.

Graph 12: Average amount of Blood Loss in Relation with duration of III Stage of Labour

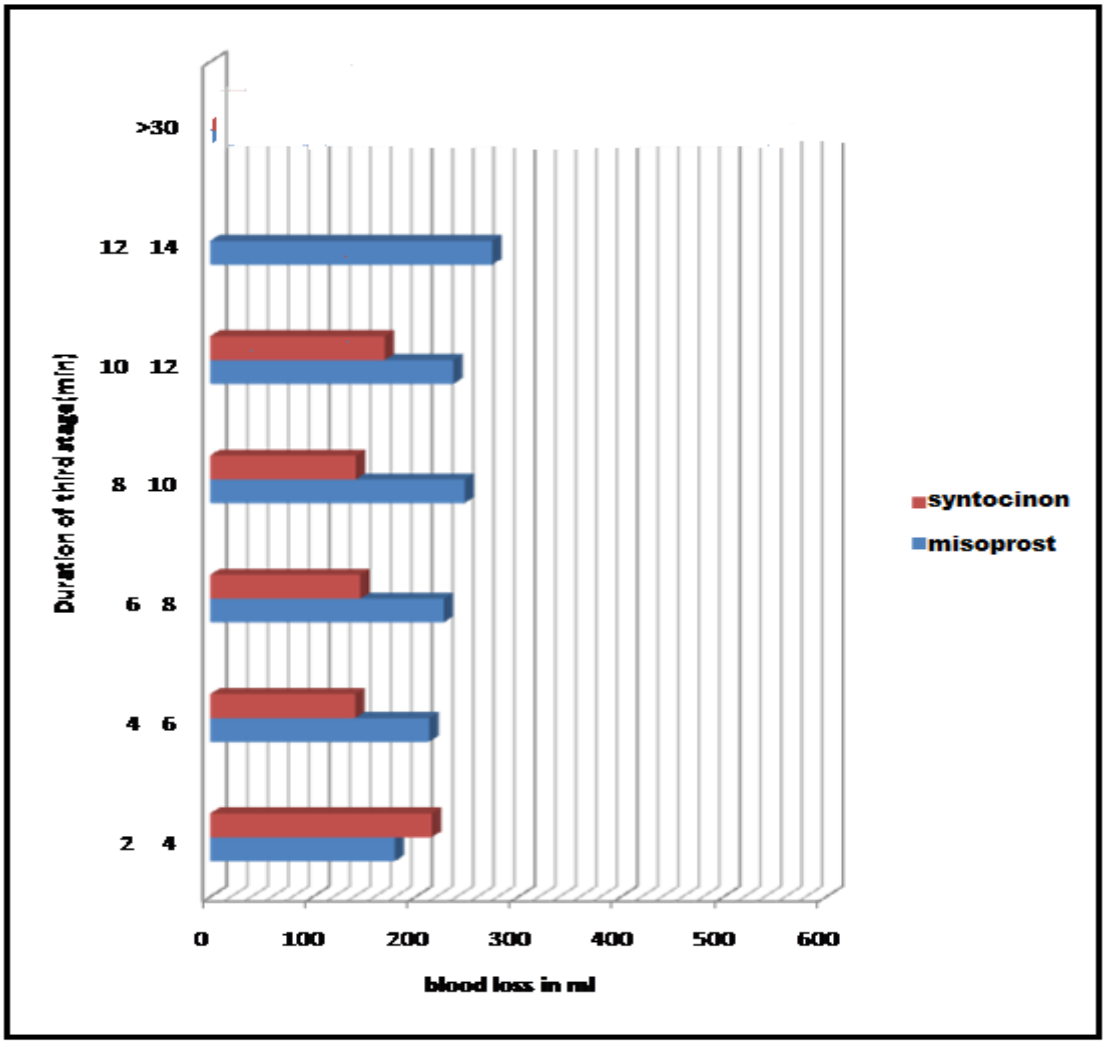


Table 16: Side Effects of Drugs in Both Groups

Side effects	Misoprostol	Syntocinon
Nausea	13(6.5%)	26(13%)
Vomiting	4(2%)	7(3.5%)
Shivering	48(24%)	0
Pyrexia	36(18%)	0
Diarrhea	0	0
Abdominal cramps	26(13%)	35(17.5%)

Side effects were seen more in group **Misoprostol** as compared to **Syntocinon** group. In misoprostol group nausea was seen in 6.5% of cases, vomiting in 2% of cases, shivering in 24% of cases , pyrexia in 18% of cases and abdominal cramps in13%cases.

In Syntocinon group nausea was seen in 13% of cases, vomiting in 3.5% of cases and, Abdominal cramps in17.5%cases

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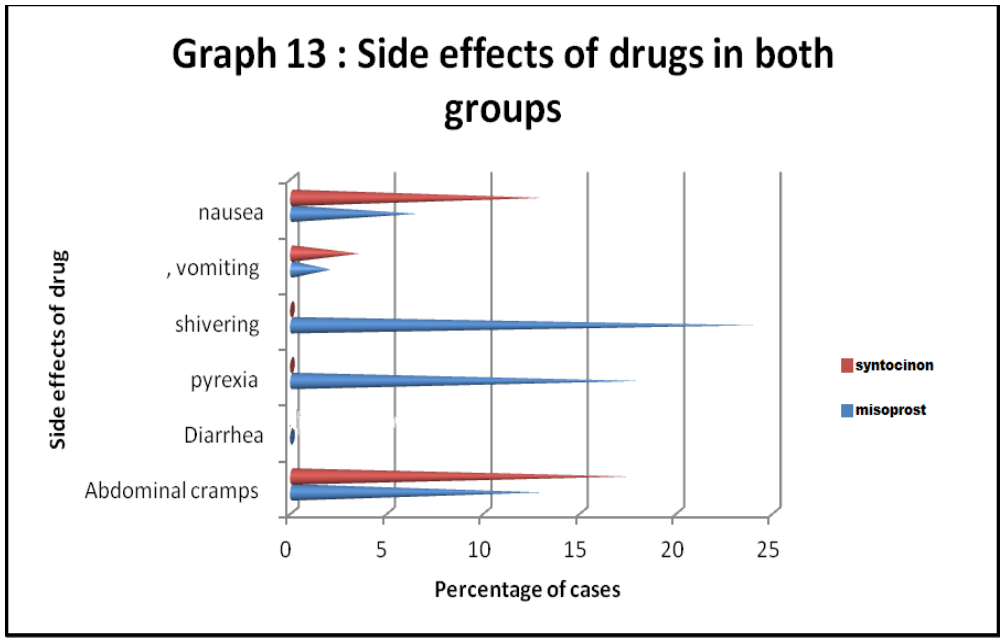

DISCUSSION

Comparative study between per rectal misoprostol(600microg) and intramuscular Syntocinon(10U) in prophylaxis of PPH done in Department of OBG in MR Medical college showed the following.

Mean duration of third stage of labour (in mins):

In the present study, in misoprostol group, average duration of 3rd stage of labour was found to be 8.03±3.23 mins whereas in syntocinon group it was found shorter, 5.26±1.9 mins

Table-18: Mean duration of third stage of labour (in mins)

Study	Misoprostol	Syntocinon
Shrestha A . et al.	8.8± 2.8	9.2± 3.2
Arun Kumar et al.	6.19 ± 0.74	6.61 ± 1
Present study	8.03± 3.23	5.26± 1.90

In study by Shrestha A. et al.when misoprostol was compared to syntocinon, there was reduction in mean length of third stage from 9.2± 3.2 mins in group in syntocinon to 8.8± 2.8mins in misoprostol group.p value 0 .84. [67]

In study by Arun kumar et al. when misoprostol was compared to syntocinon, there was reduction in mean length of third stage from 6.61 ± 1 mins in group in syntocinon to 6.19 ± 0.74 mins in misoprostol group.p value 0 .84.In misoprostol group, average duration of III stage of labour was found to be 8.03±3.23 mins whereas in syntocinon group it was found shorter, 5.26±1.9 mins , t value is 7.37 with p value of < 0.05, there by suggesting syntocinon causes statistical significant reduction in duration of III stage of labour when compared to per rectal misoprostol.

Mean hemoglobin concentration/Fall in Hb:

In our study average fall in Hb level was 0.69 g/dl in misoprostol group whereas in syntocinon group it was 0.49 g/dl

In the study by Shrestha A. et al, There was no significant difference between

The 2 groups in mean hemoglobin concentration, whether predelivery or

postpartum.[67]

In the study by Arun Kumar et, al.The resultant change of haemoglobin level was insignificant, 0.55 ± 0.03 gm/dl v/s 0.45 ± 0.03 gm/dl in both the groups respectively.

In the present study comparison of Hb changes following delivery in both the groups are statistically significant with an average fall in Hb level 0.49gm/dl in syntocinon group and 0.69 gm/dl in misoprostol group. Intergroup

comparison applying unpaired t-test shows t = 3.40, p < 0.05 which is statistically significant i.e. intramuscular syntocinon results in significantly lesser reduction in Hb when compared to per rectal misoprostol.
Therefore there is reduced fall in Hb in syntocinon group is statistically significant when compared to Misoprostol.

Mean blood loss (in ml) :
In the present study, distribution of blood loss in the two groups showed mean blood loss of 160.6 ± 127.5m1 in to syntocinon group, while in misoprostol group it was 236.8 ± 119.9m1.

Table-19: Mean blood loss (in ml).

Study	Misoprost	Syntocinon
Shrestha A, et al	156.7±124.2	132.3±91.8
Arun Kumar et al,.	230±50.2	240.30±38.70
Present study	236.8 ± 119.9	160.6 ± 127.5

In the study Shrestha A. et al, the mean blood loss was estimated was
156.7± 124.2 ml in Misoprostol group and 205± 175ml in syntocinon group.
In the study by Arun Kumar et,al.,the mean blood loss was 230 ± 50.2 ml and
240.30 ± 38.70 ml in both the groups respectively.
In the present study, distribution of blood loss in the two groups showed mean blood loss of 160.6 ± 127.5m1 in syntocinon group, while in misoprostol group it was 236.8 ± 119.9m1. On application of unpaired t test t = 4.36, p < 0.05 which is significant i.e. intramuscular syntocinon results in significantly lesser amount of blood loss when compared to per rectal misoprostol.
There was statistically significant reduction in the blood loss in syntocinon group compared to misoprostol group.

Side effects
In a similar study by Shrestha A. et al. Twenty Five women in the misoprostol group experienced shivering, but none in the syntocinon group. (P =.06) Gastrointestinal adverse effects such as nausea, vomiting, and diarrhea, were significantly higher in the syntocinon group than in the
misoprostol group (11 vs. 3, P =.01s). [67]
In similar study by Arun Kumar et al,. 25(16.66%) subjects in group 1 and 20(13.33%) in group 2 had shivering. 5(3.33%) subjects in group 1and 2 (1.33%) subjects in group 2 had nausea. 3(2%) and none had temperature >38°c in group 1 and 2 respectively. So, it was concluded that shivering, nausea and hyperpyrexia were slightly more common with misoprostol than oxytocin but it was statistically not significant.
In the present study incidence of side effects like nausea (6.5%) and vomitifig (2%) & diarrhea were less in misoprostol group as compared to syntocinon group. In to syntocinon group incidence of nausea was 13% and vomiting 3.5%. Shivering was seen only in misoprostol group i.e. 24%. Incidence of pyrexia was found only in misoprostol group which was 18% .Abdominal cramps were seen in 13% in misoprostol group &17.5% in syntocinon group.

CONCLUSION
Where maternal mortality is high and resources are limited, the introduction of low cost evidence based practices to prevent and manage post partum haemorrhage can improve maternal and infant survival
Hence prophylactic aspect to reduce the incidence of complications in third stage is very important This comparative study between and per rectal misoprostol and intramuscular Syntocinon(10U) in prophylaxis of PPH done in Department of OBG in MR Medical college showed that intramuscular Syntocinon(10U) when used results in lower blood loss, more effective reduction in duration of third stage of labour, significantly lesser reduction in Hb level after delivery but is associated with unpleasant side effects like nausea, vomiting.
Per rectal misoprostol, inexpensive and does not need refrigeration is safe but side effects were comparatively more in misoprostol and is relatively less effective in preventing blood loss, results in higher fall of Hb level and required additional oxytocics with a higher frequency. Hence a cafeteria approach is required in usage of these drugs in general in reducing post partum haemorrhage and thereby maternal morbidity and mortality.

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